ccattgccgg acatgaagta aaggattatg acgtcattca cccgctggat caaccattca 1980 ctgaaaaggg aggccttgct gttttattcg gtaatctagc tccggacggc gctatcatta 2040 aaacaggcgg cgtacagaat gggattacaa gacacgaagg gccggctgtc gtattcgatt 2100 ctcaggacga ggcgcttgac ggcattatca accgaaaagt aaaagaaggc gacgttgtca 2160 tcatcagata cgaagggcca aaaggcggac ctggcatgcc ggaaatgctg gcgccaacat 2220 cccaaatcgt tggaatggga ctcgggccaa aagtggcatt gattacggac ggacgttttt 2280 ccggagcctc ccgtggcctc tcaatcggcc acgtatcacc tgaggccgct gagggcgggc 2340 cgcttgcctt tgttgaaaac ggagaccata ttatcgttga tattgaaaaa cgcatcttgg 2400 atgtacaagt gccagaagaa gagtgggaaa aacgaaaagc gaactggaaa ggttttgaac 2460 cgaaagtgaa aaccggctac ctggcacgtt attctaaact tgtgacaagt gccaacaccg 2520 geggtattat gaaaatetag acceetggeg taatagegaa gaggeeegea eegategeee 2580 ttcccaacag ttgcgcagcc tgaatggcga atgagcttgc gccgtcccgt caagtcagcg 2640 taatgctctg ccagtgttac aaccaattaa ccaattctga ttagaaaaac tcatcgagca 2700 tcaaatgaaa ctgcaattta ttcatatcag gattatcaat accatatttt tgaaaaagcc 2760 gtttctgtaa tgaaggagaa aactcaccga ggcagttcca taggatggca agatcctggt 2820 atoggtotgo gattoogact ogtocaacat caatacaaco tattaattto cootogtoaa 2880 aaataaggtt atcaagtgag aaatcaccat gagtgacgac tgaatccggt gagaatggca 2940 aaaggttatg catttettte cagaettgtt caacaggeea geeattaege tegteateaa 3000 aatcactcgc atcaaccaaa ccgttattca ttcgtgattg cgcctgagcg agacgaaata 3060 cgcgatcgct gttaaaagga caattacaaa caggaatcga atgcaaccgg cgcaggaaca 3120 ctgccagcgc atcaacaata ttttcacctg aatcaggata ttcttctaat acctggaatg 3180 ctgttttccc agggatcgca gtggtgagta accatgcatc atcaggagta cggataaaat 3240 gettgatggt eggaagagge ataaatteeg teageeagtt tagtetgace ateteatetg 3300 taacatcatt ggcaacgcta cctttgccat gtttcagaaa caactctggc gcatcgggct 3360 toccatacaa toaatagatt gtogoacotg attgooogac attatogoga goocatttat 3420 acccatataa atcagcatcc atgttggaat ttaatcgcgg cctcgacgag caagacgttt 3480 cccqttgaat atggctcata acaccccttg tattactgtt tatgtaagca gacagtttta 3540 ttgttcatga tgatatattt ttatcttgtg caatgtaaca tcagagattt tgagacactc 3600 gacaagatga tettettgag ategttttgg tetgegegta atetettget etgaaaaega 3660 aaaaaccgcc ttgcagggcg gtttttcgaa ggttctctga gctaccaact ctttgaaccg 3720 aggtaactgg cttggaggag cgcagtcacc aaaacttgtc ctttcagttt agccttaacc 3780 ggcgcatgac ttcaagacta actectctaa atcaattacc agtggctgct gccagtggtg 3840 cttttgcatg tctttccggg ttggactcaa gacgatagtt accggataag gcgcagcggt 3900 cggactgaac ggggggttcg tgcatacagt ccagcttgga gcgaactgcc tacccggaac 3960 tgagtgtcag gcgtggaatg agacaaacgc ggccataaca gcggaatgac accggtaaac 4020 cgaaaggcag gaacaggaga gcgcacgagg gagccgccag gggaaacgcc tggtatcttt 4080 atagtcctgt cgggtttcgc caccactgat ttgagcgtca gatttcgtga tgcttgtcag 4140 gggggcggag cctatggaaa aacggctttg ccgcggccct ctcacttccc t 4191

<210> 84 <211> 702 <212> DNA <213> Bacillus subtilis <220> <221> CDS <222> (1)..(699)

<400> 84

ttg tta ctg gtt atc gat gtg ggg aac acc aat act gta ctt ggt gta 4

Met Leu Leu Val Ile Asp Val Gly Asn Thr Asn Thr Val Leu Gly Val

1 5 10 15

tat cat gat gga aaa tta gaa tat cac tgg cgt ata gaa aca agc agg
Tyr His Asp Gly Lys Leu Glu Tyr His Trp Arg Ile Glu Thr Ser Arg
20 25 30

cat aaa aca gaa gat gag ttt ggg atg att ttg cgc tcc tta ttt gat 144
His Lys Thr Glu Asp Glu Phe Gly Met Ile Leu Arg Ser Leu Phe Asp
35 40 45

cac tcc ggg ctt atg ttt gaa cag ata gat ggc att att att tcg tca 192
His Ser Gly Leu Met Phe Glu Gln Ile Asp Gly Ile Ile Ile Ser Ser
50 55 60

gta gtg ccg cca atc atg ttt gcg tta gaa aga atg tgc aca aaa tac 240 Val Val Pro Pro Ile Met Phe Ala Leu Glu Arg Met Cys Thr Lys Tyr 65 70 75 80

ttt cat atc gag cct caa att gtt ggt cca ggt atg aaa acc ggt tta 288
Phe His Ile Glu Pro Gln Ile Val Gly Pro Gly Met Lys Thr Gly Leu
85 90 95

aat ata aaa tat gac aat ccg aaa gaa gta ggg gca gac aga atc gta 336 Asn Ile Lys Tyr Asp Asn Pro Lys Glu Val Gly Ala Asp Arg Ile Val 100 105 110

aat gct gtc gct gcg ata cac ttg tac ggc aat cca tta att gtt gtc 384 Asn Ala Val Ala Ala Ile His Leu Tyr Gly Asn Pro Leu Ile Val Val 115 120 125

gat ttc gga acc gcc aca acg tac tgc tat att gat gaa aac aaa caa 432 Asp Phe Gly Thr Ala Thr Thr Tyr Cys Tyr Ile Asp Glu Asn Lys Gln 130 135 140

tac at Tyr Me 145	tg (	ggc Gly	gly Gly	gcg Ala	att Ile 150	gcc Ala	cct Pro	ggg Gly	att Ile	aca Thr 155	att I <b>l</b> e	tcg Ser	aca Thr	gag Glu	gcg Ala 160	480
ctt ta Leu Ty																528
gac aa Asp As	at . sn	att Ile	atc Ile 180	gga Gly	aaa Lys	aac Asn	act Thr	gtt Val 185	agc Ser	gcg Ala	atg Met	caa Gln	tct Ser 190	gga Gly	att Ile	576
tta tt Leu Ph	he	ggc Gly 195	tat Tyr	gtc Val	ggc Gly	caa Gln	gtg Val 200	gaa Glu	gga Gly	atc Ile	gtt Val	aag Lys 205	cga Arg	atg Met	aaa Lys	624
tgg ca Trp Gi	ag ln 10	gca Ala	aaa Lys	cag Gln	gac Asp	cca Pro 215	agg Arg	tca Ser	ttg Leu	cga Arg	cag Gln 220	gag Glu	gcc Ala	tgg Trp	cgc Arg	672
cgc to Arg Se 225		_	_	_					tag							702
<210><211><211><212><213>	23 PR	3 .T	lus s	subti	ilis											
<400> Met L			Val	Ile 5	Asp	Val	Gly	Asn	Thr 10	Asn	Thr	Val	Leu	Gly 15	Val	
Met L	eu	Leu		5					10					15		
Met Lo	eu	Leu Asp	Gly 20	5 Lys	Leu	Glu	Tyr	His 25	10 Trp	Arg	Ile	Glu	Thr 30	15 Ser	Arg	
Met Le 1 Tyr H. His L	is	Leu Asp Thr 35	Gly 20 Glu	5 Lys Asp	Leu Glu	Glu Phe	Tyr Gly 40	His 25 Met	10 Trp Ile	Arg Leu	Ile Arg	Glu Ser 45	Thr 30 Leu	15 Ser Phe	Arg Asp	
Met Le 1 Tyr H. His L	eu is ys er 50	Leu Asp Thr 35 Gly	Gly 20 Glu Leu	5 Lys Asp Met	Leu Glu Phe	Glu Phe Glu 55	Tyr Gly 40 Gln	His 25 Met	10 Trp Ile Asp	Arg Leu Gly	Ile Arg Ile 60	Glu Ser 45 Ile	Thr 30 Leu Ile	15 Ser Phe Ser	Arg Asp Ser	
Met Le 1 Tyr H. His L His S	eu is ys er 50	Leu Asp Thr 35 Gly	Gly 20 Glu Leu Pro	5 Lys Asp Met	Leu Glu Phe Met 70	Glu Phe Glu 55	Tyr Gly 40 Gln Ala	His 25 Met Ile Leu	10 Trp Ile Asp Glu	Arg Leu Gly Arg 75	Ile Arg Ile 60 Met	Glu Ser 45 Ile Cys	Thr 30 Leu Ile Thr	15 Ser Phe Ser Lys	Arg Asp Ser Tyr 80	
Met Le 1 Tyr H. His L His S Val V 65	eu is ys er 50 al	Leu Asp Thr 35 Gly Pro	Gly 20 Glu Leu Pro	Lys Asp Met Ile Pro 85	Leu Glu Phe Met 70 Gln	Glu Phe Glu 55 Phe	Tyr Gly 40 Gln Ala	His 25 Met Ile Leu Gly	10 Trp Ile Asp Glu Pro 90	Arg Leu Gly Arg 75	Ile Arg Ile 60 Met	Glu Ser 45 Ile Cys Lys	Thr 30 Leu Ile Thr	15 Ser Phe Ser Lys Gly 95	Arg Asp Ser Tyr 80 Leu	
Met Le 1 Tyr H. His L His S Val V 65 Phe H	eu is ys er 50 al	Leu Asp Thr 35 Gly Pro Ile Lys	Gly 20 Glu Leu Pro Glu Tyr	Lys Asp Met Ile Pro 85 Asp	Leu Glu Phe Met 70 Gln Asn	Glu Phe Glu 55 Phe Ile	Tyr Gly 40 Gln Ala Val	His 25 Met Ile Leu Gly Glu 105	10 Trp Ile Asp Glu Pro 90 Val	Arg Leu Gly Arg 75 Gly	Ile Arg Ile 60 Met Met	Glu Ser 45 Ile Cys Lys Asp	Thr 30 Leu Ile Thr Arg	15 Ser Phe Ser Lys Gly 95 Ile	Arg Asp Ser Tyr 80 Leu Val	
Met Le 1 Tyr H. His L His S Val V 65 Phe H Asn I Asn A	eu is ys er 50 al is	Leu Asp Thr 35 Gly Pro Ile Lys Val 115	Gly 20 Glu Leu Pro Glu Tyr 100 Ala	Lys Asp Met Ile Pro 85 Asp	Leu Glu Phe Met 70 Gln Asn	Glu Phe Glu 55 Phe Ile Pro	Tyr Gly 40 Gln Ala Val Lys Leu 120	His 25 Met Ile Leu Gly Glu 105 Tyr	10 Trp Ile Asp Glu Pro 90 Val Gly	Arg Leu Gly Arg 75 Gly Gly Asn	Ile Arg Ile 60 Met Ala Pro	Glu Ser 45 Ile Cys Lys Asp Leu 125	Thr 30 Leu Ile Thr Arg 110 Ile	15 Ser Phe Ser Lys Gly 95 Ile Val	Arg Asp Ser Tyr 80 Leu Val	